

(12)

(21) 2 352 208

(22) 20.09.2000

(51) Int. Cl. 7: G06F 12/14, G06F 12/00,
G06F 3/06

(85) 18.05.2001

(86) PCT/JP00/06440

(87) WO01/22231

(30) 11/266501 JP 21.09.1999

(71)

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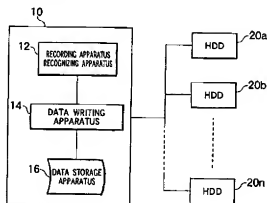
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(54) DISPOSITIF D'EFFACEMENT D'INFORMATIONS D'UN DISQUE ET PROCEDE ASSOCIE, PROGRAMME
D'EFFACEMENT D'INFORMATIONS, ET DISQUE

(54) DEVICE FOR REMOVING INFORMATION FROM RECORD DEVICE, INFORMATION REMOVING METHOD,
INFORMATION REMOVING PROGRAM, AND RECORD DEVICE

(57)

A device for removing information on a record device readily without needing any expert knowledge. Arbitrary data including the Linux, viewer, message data, image data, and information removing program is stored on a floppy disk (71). When the information removing program is executed, hard disk drives (20) are detected, and the arbitrary data is written in the hard disk drives (20) in order. Thus the data stored before the removal on the hard disks (21) is perfectly deleted.





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CA 2352208 A1 2001/03/29

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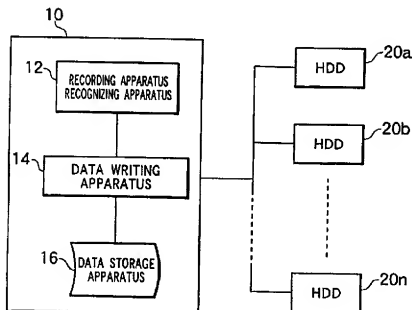
(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(86) Date de dépôt PCT/PCT Filing Date: 2000/09/20
(87) Date publication PCT/PCT Publication Date: 2001/03/29
(85) Entrée phase nationale/National Entry: 2001/05/18
(86) N° demande PCT/PCT Application No.: JP 00/06440
(87) N° publication PCT/PCT Publication No.: WO 01/22231
(30) Priorité/Priority: 1999/09/21 (11/266501) JP

(51) Cl. Int.²/Int. Cl.² G06F 12/14, G06F 3/06, G06F 12/00
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(54) Titre : DISPOSITIF D'EFFACEMENT D'INFORMATIONS D'UN DISQUE ET PROCÉDE ASSOCIE, PROGRAMME D'EFFACEMENT D'INFORMATIONS, ET DISQUE
(54) Title: DEVICE FOR REMOVING INFORMATION FROM RECORD DEVICE, INFORMATION REMOVING METHOD, INFORMATION REMOVING PROGRAM, AND RECORD DEVICE



(57) Abrégé/Abstract:

A device for removing information on a record device readily without needing any expert knowledge. Arbitrary data including the Linux, viewer, message data, image data, and information removing program is stored on a floppy disk (71). When the information removing program is executed, hard disk drives (20) are detected, and the arbitrary data is written in the hard disk drives (20) in order. Thus the data stored before the removal on the hard disks (21) is perfectly deleted.

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OPIC • CIPQ 191

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ABSTRACT

An information discarding apparatus of a recording apparatus is provided. The information discarding apparatus is capable of realizing an easy information discarding operation of the recording apparatus without requiring expertise knowledge. "Linux", "Viewer", message data, and image data, which correspond to arbitrary data, and also an information discarding program are stored in a floppy disk 71. When the information discarding program is executed, each of hard disk drives 20 is recognized, and the arbitrary data is sequentially written into the respective hard disk drives 20. As a result, such data which have been recorded on a hard disk 21 before the information discarding operation is carried out can be completely deleted.

DESCRIPTION

INFORMATION DISCARDING APPARATUS OF
RECORDING APPARATUS, INFORMATION DISCARDING METHOD,
INFORMATION DISCARDING PROGRAM, AND RECORDING APPARATUS

TECHNICAL FIELD

The present invention relates to an apparatus, a method, and a program, which are used to discard information recorded on a data rewritable recording apparatus, and also relates to a recording apparatus. More specifically, the present invention relates to an information discarding apparatus of a recording apparatus, an information discarding method thereof, and an information discarding program thereof, which are useful in such a case that when a recording apparatus is marketed as a used recording apparatus, or is disposed, information which has been recorded on this recording apparatus is discarded in an easy manner and in low cost, and also is directed to such a recording apparatus in which information discarding process has been carried out.

TECHNICAL BACKGROUND

While various techniques concerning such data processing appliances as computers, PDAs, portable telephones, and television receivers are rapidly developed, new products of computers and the

like are successively, extensively supplied in the market. On the other hand, old-model computer products are disposed, or reproduction-processed so as to reproduce used computer products. In these disposition and reproduction process operations, information recorded on data rewritable recording apparatus should be necessarily discarded in order to keep secrets of firms and also personal privacies or in order to protect copyrights. The data rewritable recording apparatus are built in computers and the like, or are known as magnetic recording apparatus, e.g., independent operable type hard disks. However, generally speaking, only if the normal process operation of "deletion of recorded information" is simply applied, then deletion marks are mealy applied to such information which manages information recording areas, so that substantial information recorded on the information recording areas are actually left. Under this condition, data can be read by carrying out a specific process operation. In order to completely delete data, arbitrary data is written into a recording area in a full data-writing manner by executing a specific operation. This data deletion should require expertise and operation procedures consisting of plural steps. Very recently, while memory capacities of the data rewritable recording apparatus are increased, longer processing time is required so as to accomplish such complete data deletions. As a result, since high process cost is necessarily required to perform the information discarding operation, there are

many cases while magnetic recording apparatus are conventionally destroyed in the physical manner in the discarding process operation. In actual cases, even when magnetic recording apparatus could be practically reused, these magnetic recording apparatus would be disposed as industrial waste. If all of data recorded on recording apparatus are deleted, then programs and data should be separately prepared, which may drive these recording apparatus. As a result, when recycled products are purchased, such a confirmation is necessarily required as to whether or not the recording apparatus can be operated under normal operation, which requires cumbersome works and thus impedes the growth of recycled product markets.

DISCLOSURE OF THE INVENTION

As a consequence, a primary object of the present invention is to provide an information discarding apparatus of a recording apparatus, an information discarding method thereof, and an information discarding program thereof, which are capable of readily discarding information of such a recording apparatus without requiring expertise thereby being capable of reducing process cost, and by which a large number of data processing appliances such as computers, and also a large number of recording apparatus can be reused.

Another object of the present invention is to provide an information discarding apparatus of a recording apparatus, an

information discarding method thereof, and an information discarding program thereof, which are capable of readily confirming whether or not such a recording apparatus is operated under normal condition as a recycled product.

Further, another object of the present invention is to provide a recording apparatus in which information discarding treatment is completely performed so that any information recorded on the recording apparatus is not be read.

To achieve the above-described objects, according to the present invention, an information discarding apparatus for discarding information recorded on data rewritable recording apparatus is characterized by comprising: recording apparatus recognizing module connectable to at least one of the recording apparatus to which data can be transferred, for recognizing the recording apparatus operated under such a condition that the data can be transferred from the information discarding apparatus; and data writing module for sequentially writing arbitrary data into an information storage area of each of the recording apparatus in a full data-writing manner with respect to all of the recording apparatus which are recognized by the recording apparatus recognizing module.

In such an information discarding apparatus of the recording apparatus, the recording apparatus recognizing module recognizes the recording apparatus which is connected to the information discarding apparatus under such a condition that the data can be

transferred from the information discarding apparatus. A plurality of recording apparatus may be connected to the information discarding apparatus at the same time, and the recording apparatus recognizing module may recognize all of these recording apparatus. The data writing module writes the arbitrary data into the recording apparatus recognized by the recording apparatus recognizing module in the full data-writing manner. This process operation is sequentially carried out to all the recording apparatus recognized by the recording apparatus recognizing module. As a result, all the storage areas of the all recording apparatus connected to the information discarding apparatus are brought into such a condition that only the arbitrary data are written. Thus, the data related to the office confidential matters, the data as to the personal information, the data such as a copyright-protected article which is prohibited to be executed/copied without authorization, and the like, can be completely deleted, and cannot be read at all, which have been previously recorded on the recording apparatus. As a result, it is possible to solve a data outflow problem which is caused by circulating the processed recording apparatus in the market.

As to the arbitrary data, such data having no meaning may be used, for example, enumeration of characters and numerals. The recording apparatus involves an independently operable appliance itself (for example, externally-connectable hard disk drive), and such an appliance built in a data processing appliance. The data

processing appliance corresponds to, for instance, a computer, a PDA, a portable telephone, or a television receiver. Typically, the data processing appliance corresponds to a computer. In this case, in order to discard a content of a hard disk built in the computer, both the recording apparatus recognizing module and the data writing module may be arranged by this computer. To be concrete, the information discard program is loaded on this computer. The arbitrary data partially may contain at least meaningful data which can be read out from the recording apparatus and can be processed by a predetermined data processing appliance in such a case that the recording apparatus is connected to the predetermined data processing appliance. As a consequence, for example, when such a data processing apparatus containing either an independently operable recording apparatus or a recording apparatus is marketed as a used appliance, it is possible to easily confirm as to whether or not either the recording apparatus or the data processing appliance can be operated under normal condition. This meaningful data is preferably such data having a free intelligent property right. Even when such a meaningful data is executed, or duplicated, this data never causes any problem related to copyright protections, patent right protections, and the like. While the data processing appliance corresponds to a computer, a PDA, a portable telephone, or a television receiver, these appliances may contain a recording apparatus whose information has been discarded, or may be connected to such a recording

apparatus. The meaningful data written in the recording apparatus is read by the data processing appliance, and then, the data-processed result is outputted. In the simplest processed data, an image and/or a character are indicated on a display. For instance, in a computer containing a hard disk, "Linux" corresponds to an OS whose copyright is abandoned, "Viewer" corresponding to free software executable on this "Linux", and also, free image data which is freely readable by this "Viewer" are written into this hard disk. In such a case that the computer is marketed as a used product, when the power supply of the computer is turned ON, "Linux" and the like which have been written in the hard disk are read out to indicate a predetermined image on a display of the computer. As a result, it is possible to confirm that both the computer and the hard disk can be operated under normal condition.

Also, an information discarding method of a recording apparatus according to the present invention is characterized by comprising: a recording apparatus recognizing step for recognizing a data rewritable recording apparatus operated under such a condition that data can be transferred thereto in order to discard information recorded on the data rewritable recording apparatus; and a data writing step for sequentially writing arbitrary data into an information storage area of each of the recording apparatus in a full data-writing manner with respect to all of the recording apparatus recognized in the recording apparatus recognizing step.

Furthermore, according to the present invention, is an information discarding program that is characterized in that the program causes a computer to execute: a recording apparatus recognizing step for recognizing a data rewritable recording apparatus operated under such a condition that data can be transferred from the computer in order to discard information recorded on the data rewritable recording apparatus; and a data writing step for sequentially writing arbitrary data into an information storage area of each of the recording apparatus in a full data-writing manner with respect to all of the recording apparatus recognized in the recording apparatus recognizing step. In this information discarding program, generally speaking, the above-mentioned computer implies such an appliance having a function which is programmable, and executes an input, a storage, a calculation, a control, and an output in accordance with a program. This computer may involve a personal computer, a PDA, and the like, and further, may involve such an electronic appliance equipped with the above-explained function such as a portable telephone and a television.

Also, a recording apparatus according to the present invention is characterized in that an information discarding treatment is carried out by executing: a recording apparatus recognizing step for recognizing a data rewritable recording apparatus operated under such a condition that data can be transferred thereto in order to

discard information recorded on the data rewritable recording apparatus; and a data writing step for sequentially writing arbitrary data into an information storage area of each of the recording apparatus in a full data-writing manner with respect to all of the recording apparatus recognized in the recording apparatus recognizing module. Even in such a case that such a recording apparatus records thereon data involving such a problem as to secrecy of a firm, privacy, and a copyright protection aspect, since the previously recorded data are completely deleted and thus cannot be read, even if this recording apparatus is marketed to be purchased by a third party, then no problem is produced. As this recording apparatus, an independently-operable recording apparatus, and also a recording apparatus built in a data processing appliance may be employed. The data processing appliance corresponds to a computer, a PDA, a portable telephone, or a television receiver.

As previously described, in accordance with the information discarding apparatus of the recording apparatus of the recording apparatus, the information discarding method thereof, and the information discarding program thereof, according to the present invention, the information of the recording apparatus can be easily discarded without requiring expertise knowledge. As a result, the process cost can be reduced, and a larger amount of computers/recording apparatus can be reused while preventing the occurrence of the secrecy leakage problem.

Also, the arbitrary data is written in the information storage area of the recording apparatus, and this arbitrary data partially contains at least the meaningful data, preferably, such data that is executable by the computer without any copyright protection problem. As a result, it is possible to readily recognize as to whether or not the recording apparatus as the recycled product can be operated under normal condition, and the cumbersome operation required when the recycled product is purchased can be reduced.

Also, in accordance with the recording apparatus of the present invention, the information discarding treatment is carried out in order that any information which has been recorded thereon before the information discarding operation cannot be completely read. Accordingly, the recycled recording apparatus can be freely marketed without unfair use/unfair copy of a copyright-protected article, and also without a leakage of secret information.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a circuit block diagram for indicating an information discarding apparatus of a recording apparatus, according to an embodiment of the present invention.

Fig. 2 is a structural diagram of a standard computer capable of forming the information discarding apparatus of Fig. 1.

Fig. 3 is a flow chart for describing a flow operation of an information discarding process executed in the information

discarding apparatus of Fig. 1.

Fig. 4 is a flowchart for explaining a detailed process operation of "Fill Data" involved in the process operation of Fig. 3.

Fig. 5 is a schematic diagram for indicating an application example in such a case that the information discarding apparatus of Fig. 1 is applied to an industrial reproducing process.

EMBODIMENTS

Information discarding apparatus according to an embodiment of the present invention will be described as follows. It should be noted that the below-mentioned embodiments are described in order only to achieve better understandings of the present invention, and never limit a scope of the present invention.

In Fig. 1, an information discarding apparatus 10 is arranged by a recording apparatus recognizing apparatus 12, a data writing apparatus 14, and a data recording apparatus 16. A plurality of hard disk drives 20a, ---, 20n corresponding to data rewritable recording apparatus are connected to the information discarding apparatus 10, so that the information discarding apparatus 10 is brought into a data transferable/receivable condition with respect to these hard disk drives 20a, ---, 20n. The recording apparatus recognizing apparatus 12 recognizes these hard disk drives 10a, ---, 10n operated under data transferable conditions from the information discarding apparatus. The data writing apparatus 14 reads out data

from the data recording apparatus 16, and writes data into information storage areas of all of the hard disk drives 10a, ---, 10n, which are recognized by the recording apparatus recognizing apparatus 12, in a full data-writing manner. In the data recording apparatus 16, arbitrary data partially containing at least data executable by a computer are stored.

The arbitrary data employed in this embodiment is constituted by "Linux", "Viewer", message data, and a plurality of image data. "Linux" is an OS (operating system), the copyright of which is renounced, or abandoned as well known. "Viewer" corresponds to an experience version, a shareware program, public domain software, free-charge software or the like. "Viewer" is operable on "Linux", and is capable of sequentially reading a message file and a plurality of image data to indicate the read file and image data on a display. A message file is constructed of both image data and text data. The contents of this message file contain operation time, days, and company names of persons who execute reproducing works, information and advertisements which include addresses, purchase guides and the like used to purchase other operating systems (OS) and application software, other advertisements, and so on. Image data correspond to such images as scene (landscape) photographs and snap-shot photographs, whose copyrights are abandoned.

In other embodiments, arbitrary data correspond to such text data that indicate characters, numerals, and symbols arranged at

random. This arbitrary data is meaningless data, and is produced only for one purpose. That is, this arbitrary data is formed so as to only "paint over" contents recorded on a hard disk.

In Fig. 2, a computer contains a CPU 31, a main memory 32, and a BIOS ROM 33. This computer is connected via a KB I/F 34, a mouse I/F 35, a display I/F 36, an FDD I/F 37, an HDD I/F 38, and a communication I/F 39 to a keyboard 40, a mouse 50, a display unit 60, a floppy disk drive 70, a hard disk drive 20, and another computer 80. This computer is connected via transfer media such as a LAN, the Internet, a personal-computer communication, an Intranet to another computer 80.

In this embodiment, a program group used to constitute the information discarding apparatus 10 shown in Fig. 1 is recorded on a floppy disk 71. When the floppy disk 71 is inserted into the floppy disk drive 70 and then a power supply of the computer is turned ON, the CPU 31 executes a program which has been stored in the BIOS ROM 33. As a result, this computer may execute a basic initialization of hardware. Thereafter, normally, the CPU 31 loads the basic software (OS) recorded on the hard disk 21 of the hard disk drive 20 via the HDD I/F 38 into the memory 32. Subsequently, this CPU 31 is operated under control of the loaded OS. However, in the case of this embodiment, since the floppy disk 71 has been inserted into the floppy disk drive 70 when the power supply is turned ON, the BIOS ROM 33 is operated in such a manner that instead of the OS recorded

on the hard disk 21, such an OS recorded on the floppy disk 71 is loaded via the FDD I/F 37 to the memory. In this embodiment, "Linux" has been stored in the floppy disk 71.

When "Linux" is loaded into the memory 32 and the control operation is advanced to OS, this OS retrieves the hardware including a magnetic recording apparatus connected to the computer, and registers the retrieved hardware as an effective device. Also, an information discard program group which has been recorded on the floppy disk 71 so as to execute sequential process operation defined in Fig. 3 and Fig. 4 is automatically initiated. As a result, the respective blocks having the functions of Fig. 1 are constituted, so that the information discarding apparatus 10 is formed.

In the flow charts shown in Fig. 3 and Fig. 4, as explained above, when the hardware initialization as OS is accomplished after the power supply of the computer has been turned ON (step S1), the recording apparatus (namely, hard disk drives 20) which has been recorded as the effective device by the CPU 31 (recording apparatus recognizing apparatus 12) is recognized (step S2). The CPU 31 (data writing apparatus 14) selects one of the recognized hard disk drives 20 (step S3), executes such a process operation "Fill Data" with respect to the selected hard disk drive 20 in order to discard the old information existed in the information recording area of the selected hard disk drive 20.

The process operation of "Fill Data" is indicated in Fig. 4.

First, a block counter is initialized (step S51), and "Linux", "Viewer", and message data are sequentially written into blocks from a first block (step S52). Then, image data is sequentially written into blocks subsequent thereto (step S53). Each of these data to be written is such data which is read out from the sloppy disk 71 to be stored into the memory 32 (data recording apparatus 16). A data size of entire data which has been stored in the memory 32 has no specific relationship to a storage capacity of the hard disk 21, but the same image data (otherwise, meaningless text data in another embodiment) is repeatedly written. When the data writing operation into the first block is accomplished, the CPU checks whether or not the present block is final block (step S54). When the present block is not the final block, the counter is set forward by 1 count (step S55), and the image data is written into a second block. When the image data have been written into all of these blocks, the process operation of "Fill Data" is ended.

Returning back to the flow chart of Fig. 3, such a next recording apparatus whose data should be discarded is selected (step S6). While there is one set of the hard disk drive 20 in the arrangement of Fig. 2, in such a case that a large number of hard disk drives are provided as shown in Fig. 1, the CPU judges that the next recording apparatus whose data should be discarded is present (step S4), and then, the information discarding process operation is sequentially carried out. To the contrary, when the next recording apparatus

whose data should be discarded is not found out, an end message is displayed on the display 60 (step S7), and then, all of the process operations are completed.

Strictly speaking, it should be understood that a floppy disk drive, a magnetic optical disk drive, a memory card and the like are also rewritable recording apparatus. However, if storage media are dismounted from these devices, then recorded information is not left when these storage media are disposed etc. As a consequence, these recording apparatus are not directed to such apparatus where stored information is discarded. Thus, the program may recognize that these recording apparatus are not such apparatus where information-discarding operation should be carried out. Also, with respect to the normal data transfer, the program may recognize that not-deletable/rewritable recording apparatus, e.g. EPROM, and flash ROM, are not such apparatus where information-discarding operation should be carried out.

As apparent from the foregoing description, the above-explained program may be recorded not only on the floppy disk employed in this embodiment, but also stored in storage media such as a magnetic optical disk and a ROM disk. Also, the program may be transferred via a transfer medium to a computer so as to be executed by this computer. That is, another computer 80 indicated in Fig. 2 receives a request issued from the computer, or is remote-controlled via a LAN by the computer, and then transfers the program, so that the computer may

execute the above-explained process operation.

Next, in the case that the information discarding process sequence of this embodiment is utilized in a used-computer reproducing process sequence operable for an industrial purpose, for instance, such a system as shown in Fig. 5 may be arranged. After a plurality of used computers are accepted in a work line of this system, the information discarding work is carried out before the process operation is entered into a reproduction line. This work is realized by merely inserting the floppy disk 71 on which the above-explained information discarding program group has been recorded into the floppy disk drive 70 of the computer C and by simply turning ON the power supply of the computer in addition to the operation confirmation work which is normally executed. In other word, the computer C whose packing is opened is mounted on a left portion (as viewed in this drawing) of a turn table 90, and then, the information discarding work is commenced. If the rotation speed of this turn table 90 is fitted to a time duration required for the information discarding work, then this information discarding work may be just accomplished when the computer C is turned up to an entrance port of a reproduction line 91 located at a right hand of this drawing. As explained above, in order to automatically execute the information discarding process, a work staff does not need to wait for the completion of such an information discarding work while this work staff continuously operates the computer. Alternatively, while the

turn table is not used, even when person who is required to confirm operations, and/or a person worked in the reproduction line are moved to execute the respective necessary works, the time saving effect may be similarly realized by executing the automatic information discarding process operation.

A disposing process operation of a computer may be performed in a similar manner to that of a reproducing process operation. However, there are some possibilities that a disposed computer itself cannot be operated. In this case, for instance, if the below-mentioned information discarding apparatus is manufactured, then a hard disk drive which is dismantled from a disposed computer which cannot be operated is connected to this information discarding apparatus so as to discard the recorded information. Thus, this non-operable discarded computer may be reproduced as a recycled computer product. In such an information discarding apparatus, while a connector and a cable of a hard disk drive are taken out from a case of a computer, the hard disk drive may be readily replaced. Further, a hard disk drive externally connected with a computer may be handled in a similar manner in order to reproduce this hard disk drive as a recycled computer product.

In this case, "data with free intellectual property right" may involve the following items, for instance, an operating system (OS) (typically known as "Linux") whose copyright is abandoned; sound data of music, image data such as photographs and pictures, motion

picture data such as movies and animations, and text data such as novels and lyrics, the copyright protections of which are abandoned, or have already expired; application programs such as "Viewer" and game programs, which have no copyright problem, for example, a trial version, a shareware program, public domain software, and free software; and further, such a program which cannot be protected by a patent, or whose patent right has already expired. Moreover, "data with free intelligent property" involves such data originated from a person who executes a reproducing work, a person who is a patent right owner, or a copyright owner, or any person who is allowed to duplicate this data from a copyright owner, and/or a patent right owner. In addition, "data with free intelligent property" contains such data which cannot originally constitute a copyright article, for example, image data which is produced from a landscape photograph and a snap-shot photograph in a data form.

Since such data executable by the computer is written into the storage area, the copyright article and the information required the secrecy of the original owner, which have been written in the recording apparatus can be deleted. Also, when the recording apparatus which constitutes the recycled product is marketed, it is possible to easily confirm as to whether or not this recording apparatus can be operated under normal condition. For instance, if a recording apparatus corresponds to a hard disk mounted on a computer, then both "Linux" and a screen saver program are written

into this hard disk, and also a plurality of image data are written into a remaining storage area of this hard disk in a full data-writing manner. When the power supply of the computer is turned ON, this computer is initiated based on "Linux" to successively indicate images on a display. As a result, it is possible to confirm that both the computer and the hard disk can be operated under normal condition. Similarly, when the recording apparatus corresponds to an externally-connectable HDD, this externally-connectable HDD is connected to the computer and the power supply of this computer is turned ON in order to read out OS and an application program from the hard disk. As a result, it is possible to confirm as to whether or not the externally-connectable HDD can be operated under normal condition.

In this embodiment, while "Linux", "Viewer", and the message file, and further, a plurality of image data have been written into the hard disk 21 of the hard disk drive 20, when the power supply of the computer on which this hard disk drive 20 is mounted is turned ON, "Linux" is read out from the hard disk 21. Then, "Viewer" is automatically initiated so as to sequentially read the message file and a plurality of image data from the hard disk 21, and then these read data are indicated on the display.

As previously explained, in accordance with this embodiment, the information discarding process operation can be realized by merely performing such a simple work by the working staff, namely

the floppy disk 71 is inserted into the floppy disk drive 70, and the power supply of the computer is turned ON. As a result, an expert staff is no longer required, resulting in low process cost. Although the information discarding process operation requires long working time, since this information discarding process operation is automatically carried out, no useless process work is required and the low-cost operation is available. Also, the information discarding process operation can be carried out in low cost, a total number of computers and recording apparatus, which are presently destroyed, but may be reproduced by the present invention, is increased. As a result, for disposal process, the number of destroy of computers (making a computer physically destroyed as a waste) can be reduced, which may contribute a better environment. Also, since the information discarding process operation can be carried out under perfect condition even in hard disks of used/recycled computers, there is no problem as to copyright matters which are caused by information remained in the hard disks. Furthermore, for instance, if such a floppy disk on which this information discarding program group has been recorded is available, then the information can be very simply discarded. Therefore, when a computer is disposed even by such a person who does not have such a specific technique, the information stored in this computer can be easily discarded, so that it is possible to avoid such a problem. That is, secret information is leaked and also personal data is stolen due to the

remaining information. Also, since OS, other programs, and data are written into the recording apparatus, it is possible to confirm as to whether or not the recycled product can be operated under normal condition by merely turning ON the power supply. Furthermore, since the guide information and the advertisement are contained in the message file, any persons who purchase the recycle products can readily set the computers and the externally-connectable HDDs to the operable conditions, namely can utilize the useful information. This message file contains the address and the purchase methods used to purchase OS and application software.

As explained above, in accordance with the information discarding apparatus and method of the recording apparatus, and also the transfer medium of the present invention, the information stored in the recording apparatus can be readily discarded without requiring the expert knowledge. As a result, the cost required to discard the information can be reduced, and also a large number of computers and recording apparatus can be recycled while preventing occurrences of various problems such as leakage of secrecy. Also, since such arbitrary data is written into the information storage area of the recording apparatus and this arbitrary data partially contains at least computer-executable data without any copyright problem, everyone can readily grasp as to whether or not the recycled recording apparatus can be operated under normal condition, and also can reduce cumbersome procedure when the recycled recording apparatus is

purchased.

While the preferred embodiments of the present invention have been described, those skilled in the art can become apparently aware of such a fact. That is, the information discarding apparatus, the information discarding method, and the information discarding program, according to the present invention, may be carried out by being modified, changed, and substituted without departing from the technical scope and the technical spirit of the present invention.

CLAIMS:

1. An information discarding apparatus for discarding information recorded on data rewritable recording apparatus, comprising:
recording apparatus recognizing module connectable to at least one of said recording apparatus to which data can be transferred, for recognizing said recording apparatus operated under such a condition that the data can be transferred from the information discarding apparatus; and
data writing module for sequentially writing arbitrary data into an information storage area of each of said recording apparatus in a full data-writing manner with respect to all of said recording apparatus which are recognized by said recording apparatus recognizing module.
2. An information discarding apparatus of a recording apparatus as claimed in claim 1, wherein said arbitrary data has completely no meaning.
3. An information discarding apparatus of a recording apparatus as claimed in claim 1 or claim 2, wherein said recording apparatus is built in a data processing appliance.
4. An information discarding apparatus of a recording apparatus as claimed in claim 3, wherein said data processing appliance corresponds to a computer, a PDA, a portable telephone, or a television receiver.
5. An information discarding apparatus of a recording apparatus

as claimed in claim 3, wherein said data processing appliance is a computer, and both said recording apparatus recognizing module and said data writing module are constituted by said computer.

6. An information discarding apparatus of a recording apparatus as claimed in claim 1, wherein said arbitrary data partially contains at least meaningful data which can be read out from said recording apparatus and can be processed by a predetermined data processing appliance in such a case that said recording apparatus is connected to said predetermined data processing appliance.

7. An information discarding apparatus of a recording apparatus as claimed in claim 6, wherein said meaningful data is data with a free intelligent property right.

8. An information discarding apparatus of a recording apparatus as claimed in claim 6 or claim 7, wherein said data processing appliance corresponds to a computer, a PDA, a portable telephone, or a television receiver.

9. An information discarding method of a recording apparatus, comprising:

a recording apparatus recognizing step for recognizing a data rewritable recording apparatus operated under such a condition that data can be transferred thereto in order to discard information recorded on said data rewritable recording apparatus; and

a data writing step for sequentially writing arbitrary data into an information storage area of each of said recording apparatus

in a full data-writing manner with respect to all of said recording apparatus recognized in said recording apparatus recognizing step.

10. An information discarding program, wherein said information discarding program causes a computer to execute:

a recording apparatus recognizing step for recognizing a data rewritable recording apparatus operated under such a condition that data can be transferred from the computer in order to discard information recorded on said data rewritable recording apparatus; and

a data writing step for sequentially writing arbitrary data into an information storage area of each of said recording apparatus in a full data-writing manner with respect to all of said recording apparatus recognized in said recording apparatus recognizing step.

11. A recording apparatus, wherein an information discarding treatment is carried out by executing:

a recording apparatus recognizing step for recognizing a data rewritable recording apparatus operated under such a condition that data can be transferred thereto in order to discard information recorded on said data rewritable recording apparatus; and

a data writing step for sequentially writing arbitrary data into an information storage area of each of said recording apparatus in a full data-writing manner with respect to all of said recording apparatus recognized in said recording apparatus recognizing module.

12. A recording apparatus as claimed in claim 11, wherein said

recording apparatus is built in a data processing appliance.

13. An information discarding apparatus of a recording apparatus as claimed in claim 12, wherein said data processing appliance corresponds to a computer, a PDA, a portable telephone, or a television receiver.

FIG. 1

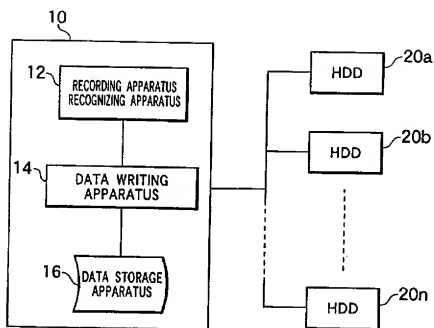
*Marks & Clerk*

FIG.2

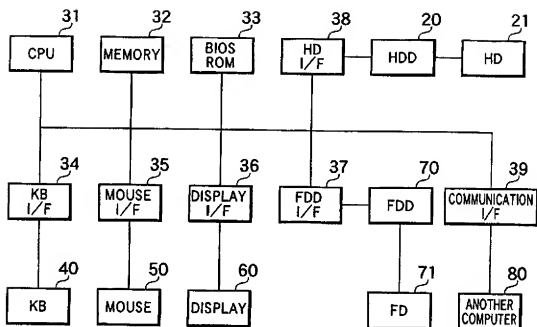
*Marks & Clerk*

FIG.3

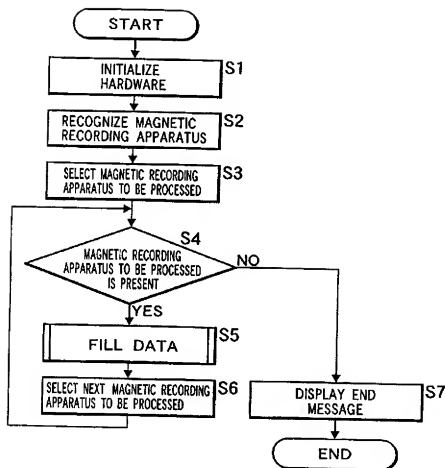


FIG. 4

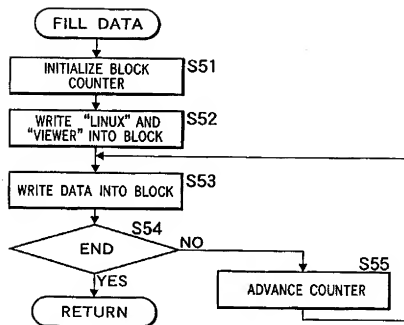
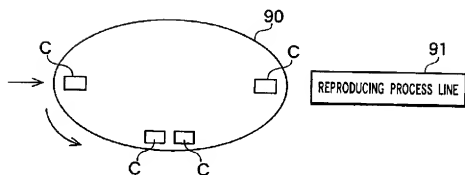
*Marks & Clerk*

FIG.5



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